How Apple Leads through INNOVATION EXCELLENCE

Apple's breathtaking rate of innovation is nothing short of astonishing. The company's market cap is the highest in human history. And analysts project that Apple will cross the $1 trillion mark by 2014.

How do they do it? What is the secret behind Apple's innovation machine? And how could we apply those same insights to biopharmaceuticals?

Skeptics correctly point out that Apple's ecosystem is very different from the highly regulated world of biopharmaceuticals. But a closer look at the underlying principles of innovation suggests that Apple's approach can work for our world too.

Sustaining and Disruptive Innovation

Apple succeeds through a powerful combination of sustaining and disruptive innovation. Sustaining innovation is defined as "the same old list of product features, just faster, better or cheaper." An antihypertensive with a better side effect's profile is one example. Chemotherapy with a better hazard ratio but similar side effects is another. The defining characteristic of a sustaining innovation is that "the definition of what's important" hasn't changed. We're just doing it faster, better, or longer. The once-a-day version of a short half-life product is a classic sustaining innovation. Interestingly, a new mechanism of action that delivers the same list of features and benefits may be a breakthrough but it is still a sustaining innovation because it hasn't changed the list of what's most important like efficacy, safety, or compliance.

The defining characteristic of a disruptive innovation is that it offers a substantially different list of what's important — a list that nobody ever thought of before.

The Blackberry story clearly illustrates this difference. Research In Motion (RIM), the maker of the Blackberry, has pursued the path of sustaining innovations. Blackberry's list of what's important in a smart phone is shown below:

- Best typing experience.
- Battery life.
- Network security.
- Network speed.
- Network reliability.

And all of Research In Motion's innovation efforts have focused on improving those five performance dimensions.

Apple disrupted the smart phone market by creating an entirely different hierarchy of what's important! Here is Apple's list:

- A universal platform for learning about, buying, consuming, sending, and receiving digital content.
- A universal address book that applies to voice, text, and e-mail.
- A touch screen interface that could be adapted to the needs of the app vs making the app adapt to the limitations of a qwerty keyboard.
- A GPS unit that provides location information and sets up a completely new way of using Google maps.

Notice that "best typing experience" isn't even on the list. Apple's iPhone was designed to do different things from the beginning. And that is the essence of disruptive innovation. Apple created a device for consuming any digital content:

- Songs
- Photos
- Maps
- Weather
- Movies
- Stock Prices
- TV Shows
- Apps
- E-mail
- Voice Mail

The fact that iPhone's keyboard "sucked" compared to the Blackberry was irrelevant. Apple's innovations let customers do completely new things and that's what made it disruptive.

Disrupting Oncology

In biotechnology new research is offering disruptive innovations for treating cancer. Dr. Carl June's translational medicine team at the University of Pennsylvania has developed a way to train our immune system's T-cells to attack cancer cells carrying the CD-19 surface receptor. This fundamentally changes the list of what's important in treating this kind of cancer.

First, June's team harvests a patient's T-cells. Then they use a "gutted" HIV-1 virus as a vector to deliver a portfolio of genes that turns that T-cell into a "serial killer" of any cancer cell carrying the CD-19 receptor. Then the genetically modified T-cells are infused into the patient. The resulting cytokine storm (high fever, dangerously low blood pressure) and tumor lysis syndrome must be carefully managed; early studies in three patients showed dramatic results.

Dr. June and his team at Penn have created a new performance hierarchy for the treatment of cancer — very different from the current paradigm of radiation, surgery and chemo. This is the essence of disruptive innovation.

What makes Apple so successful is that it uses a combination of sustaining and disruptive innovations to evolve its products faster than any other company. Higher resolution touch screens like the Retna Display are a sustaining innovations, as are longer battery life and better lenses for the video camera in the phone. Adding the voice control system SIRI and using the iCloud to share data across all devices are disruptive innovations. The combination is magic. Apple succeeds because it is able to deliver both kinds of innovation on a regular basis.

And we in biopharmaceuticals can learn to do the same. PV

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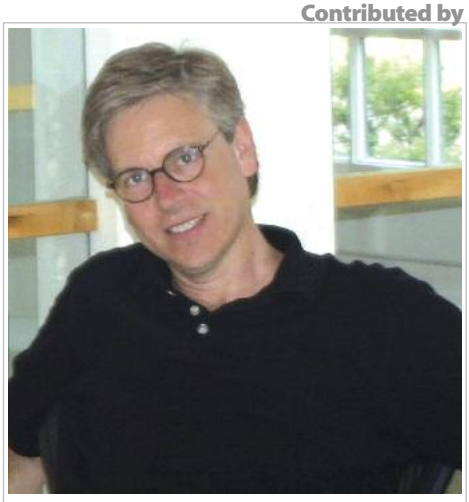

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